

REMARKS

I. Introduction

With the cancellation of claims 2, 4, 13, 14, 17, 19, 28 and 29 herein without prejudice, claims 1, 3, 5 to 12, 15, 16, 18, 20 to 27, 30 and 31 are currently pending in this application. In view of the foregoing amendments and following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Rejection of Claims 1 to 31 Under 35 U.S.C. § 102 (b)

Claims 1 to 31 were rejected under 35 U.S.C. § 102 (b) as anticipated by U.S. Patent No. 5,029,087 ("Cowan et al."). Claims 2, 4, 13, 14, 17, 19, 28 and 29 have been canceled herein without prejudice thus rendering the rejection of these claim moot. Applicant respectfully submits that Cowan et al. do not anticipate claims 1, 3, 5 to 12, 15, 16, 18, 20 to 27, 30 and 31 for at least the following reasons.

Claims 1, 11, 16, 26, and 31 have been amended herein without prejudice to further distinguish the system of Cowan et al. Support for the amendments to independent claims 1, 11, 16, 26, and 31 may be found, for example, in the Specification at p. 4, line 23 to p. 5, line 28 and in claims 2, 4, 13 and 14.

Cowan et al. purportedly relate to an electronic control system for controlling torque converter bypass clutches. In contrast to the presently claimed system, rather than rely on input torque as an indicator of slip, Cowan et al. disclose actually measuring converter slip by comparing engine RPM, i.e., input speed, to the torque converter output shaft speed. See col. 3, lines 60 to 62. Cowan et al. do not infer the existence of slip by detecting input torque (which may cause slip) and do not adjust their desired slip upon detection of input torque. Consistently, Cowan et al. have no need to detect changes in input torque. Therefore, Cowan et al. do not monitor an input torque or a change in input torque currently being applied to the torque converter inside the closing interval, as required by amended independent claims 1, 11, 16, 26, and 31, or include a sensor configured to detect input torque applied to the torque converter, as required by amended independent claims 11 and 26. Consistently, Cowan et al. also do not disclose, or even suggest, a data storage unit storing a data record, from which a slip value can be derived for each input torque (E), the slip value being intended to be used as an initial value, as a basis for determining the setpoint value (sw) for the slip as a function of time, as further required by claims 11 and 26.

Nor do Cowan et al. set a new initial value for the slip existing at the beginning of the closing interval upon detection of a predetermined amount of change in the input torque, as further required by claims 1, 11, 16, 26, and 31. Cowan et al.'s adjustment to their desired slip is done in a continuous loop. See col. 4, lines 30 to 37. Therefore, adjustment to their desired slip is done on a continuous basis not just when the slip error exceeds a predetermined threshold. Claims 1, 16, and 31 specifically require setting a new initial value if the input torque changes more than a predetermined amount. Even if Cowan et al.'s use of engine RPM to measure slip could in any manner be considered to constitute monitoring input torque, which it does not, Cowan et al. in no manner conditions adjustment of the initial value for the slip existing at the beginning of the closing interval upon the magnitude of change in the engine RPM. See col. 4, lines 30 to 44 and col. 14, lines 23 to 26.

As indicated above, Cowan et al. calculate slip by comparing engine RPM to torque converter output shaft speed. See col. 3, lines 60 to 63. This value is then subtracted from the desired slip to obtain the slip error. See col. 3, lines 62 to 63. The slip error is then stated to be used to address the duty cycle memory register for the appropriate value which in turn causes an adjustment of the input to the pulse width modulated solenoid. See col. 3, lines 64 to 67. Cowan et al. use the slip error to adjust the desired slip value but in no manner indicate that this adjustment causes the desired slip to be set to the specific value of slip which would appear at this input torque in the case of a completely opened torque-converter lockup clutch, as further required by amended claims 1, 16, and 31.

Therefore, for all the foregoing reasons, Cowan et al. do not disclose, or even suggest, all of the limitations of independent claims 1, 11, 16, 26, and 31.

To anticipate a claim, each and every element as set forth in the claim must be found in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Furthermore, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim.” Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). That is, the prior art must describe the elements arranged as required by the claims. In re Bond, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). As more fully set forth above, it is respectfully submitted that Cowan et al. do not disclose, or even suggest, all of the limitations recited in independent claims 1, 11, 16, 26, and 31. Therefore, it is respectfully submitted that Cowan et al. do not anticipate independent claims 1, 11, 16, 26, and 31.

Regarding the dependent claims, it is respectfully submitted that Cowan et al. do not anticipate these claims for at least the same reasons provided above.

As for claims 3 and 18, Applicant respectfully submits that these claims are patentable over Cowan et al. for at least the following additional reasons. Nowhere do Cowan et al. disclose, or even suggest, providing a linear transition from the initial value to the target value as a time characteristic inside the closing interval, as required by claims 3 and 18. Cowan show in Figure 6 and specifically state at col. 13, lines 28 to 31, that the desired slip is calculated for each background loop so that the value of the absolute slip approaches asymptotically the value of the target slip.

As for claims 9, 10, and 24, Applicant respectfully submits that these claims are patentable over Cowan et al. for at least the following additional reasons. As indicated above, Cowan et al. disclose actually measuring converter slip by comparing engine RPM, i.e., input speed, to the torque converter output shaft speed. See col. 3, lines 60 to 62 and col. 9, lines 2 to 5. However, Cowan et al. do not disclose, or even suggest, monitoring the time characteristic of the slip for a decline in order to detect the start of power transmission in the torque-converter lockup clutch, as required by claim 9, or after a decrease in the slip is detected, setting a clamping pressure for the torque converter (1) as a function of a coupling torque to be transmitted, and as a function of the setpoint value (sw) for the slip of the torque-converter lockup clutch (20), as required by claim 10, or detecting the start of power transmission in the torque-converter lockup clutch by monitoring the time characteristic of the slip for a decline, as required by claim 24.

As for claims 15, 21, and 30, Applicant respectfully submits that these claims are patentable over Cowan et al. for at least the following additional reasons. Cowan et al. do not disclose, or even suggest, a data storage unit (36) in which a characteristics map is stored, which, inside specifiable interval boundaries, assigns each performance figure of the torque converter (1) a corresponding slip value, as required by claim 15, or wherein the slip to be used as the new setpoint value and as a basis for the applied input torque is determined using a stored characteristics map, as required by claim 21, or wherein the data storage unit includes a characteristics map, which, inside specifiable interval boundaries, includes a slip value for each corresponding performance figure of the torque converter, as required by claim 30. As indicated above, Cowan et al. do not monitor input torque, and consistently, do not have a characteristic map assigning each performance figure of the torque converter (1) a corresponding slip value, as required by claims 15, 21, and 30.

In summary, Applicant submits that claims 1, 3, 5 to 12, 15, 16, 18, 20 to 27, 30 and 31 are not anticipated by Cowan et al. Withdrawal of this rejection is therefore respectfully requested.

III. Conclusion


It is therefore respectfully submitted that all of the presently pending claims are allowable. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

KENYON & KENYON LLP

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By:


Gerard A. Messina
Reg. No. 35,952

One Broadway
New York, New York 10004
(212) 425-7200
CUSTOMER NO. 26646